

INSTALLATION INSTRUCTIONS

TIME CODE READER/GENERATOR KITS FOR VPR-2 VIDEO PRODUCTION RECORDER

GENERAL INFORMATION

Installation of a TCR/G kit modifies the VPR-2 to accept the Time Code Reader/Generator PWA, Assembly No. 1400160. Separate installation instructions are given for TCR/G Kit, No. 1400840 (VPR-2 serial numbers 101 through 399) and TCR/G Kit No. 1400860 (VPR-2 serial numbers 400 and up). Refer to the VPR-2 Installation and Operation Manual, Catalog No. 1809379, for background information on the VPR-2.

INSTALLATION OF KIT NO. 1400840

For kit no. 1400840, modifications are required on the electronics assembly motherboard, and modification or replacement is required on five PWA's. Also, installation of a power supply upgrade kit is required for most units. Perform the required modifications per the following steps:

Replacement of Time Readout PWA

1. Remove the two screws located on the top portion of the control panel, and swing the panel open.
2. Disconnect plug CP-P4 (and CP-P5 on later PWA's). Remove the Time Readout PWA, Assembly No. 1400436 (located behind the tape timer section of the control panel) and replace it with PWA Assembly No. 1400420, furnished in the kit. Reconnect plug CP-P4 (and CP-P5 if present).

Modification of Electronics Assembly

1. To obtain access to the electronics assembly motherboard, remove the following:
 - a. Rear cover
 - b. MDA assembly
 - c. Regulator assembly
 - d. Power chassis assembly
2. Cut the following traces on the circuit side of the motherboard:
 - a. Trace between XA19-69 and XA19-70 (Figure 1).
 - b. Trace between XA2-85 and pad 85 (Figure 2).
3. Add the following jumpers, using 30-gauge wire (part no. 615-095), to the circuit side of the motherboard (referring to Figure 1 except as otherwise indicated):

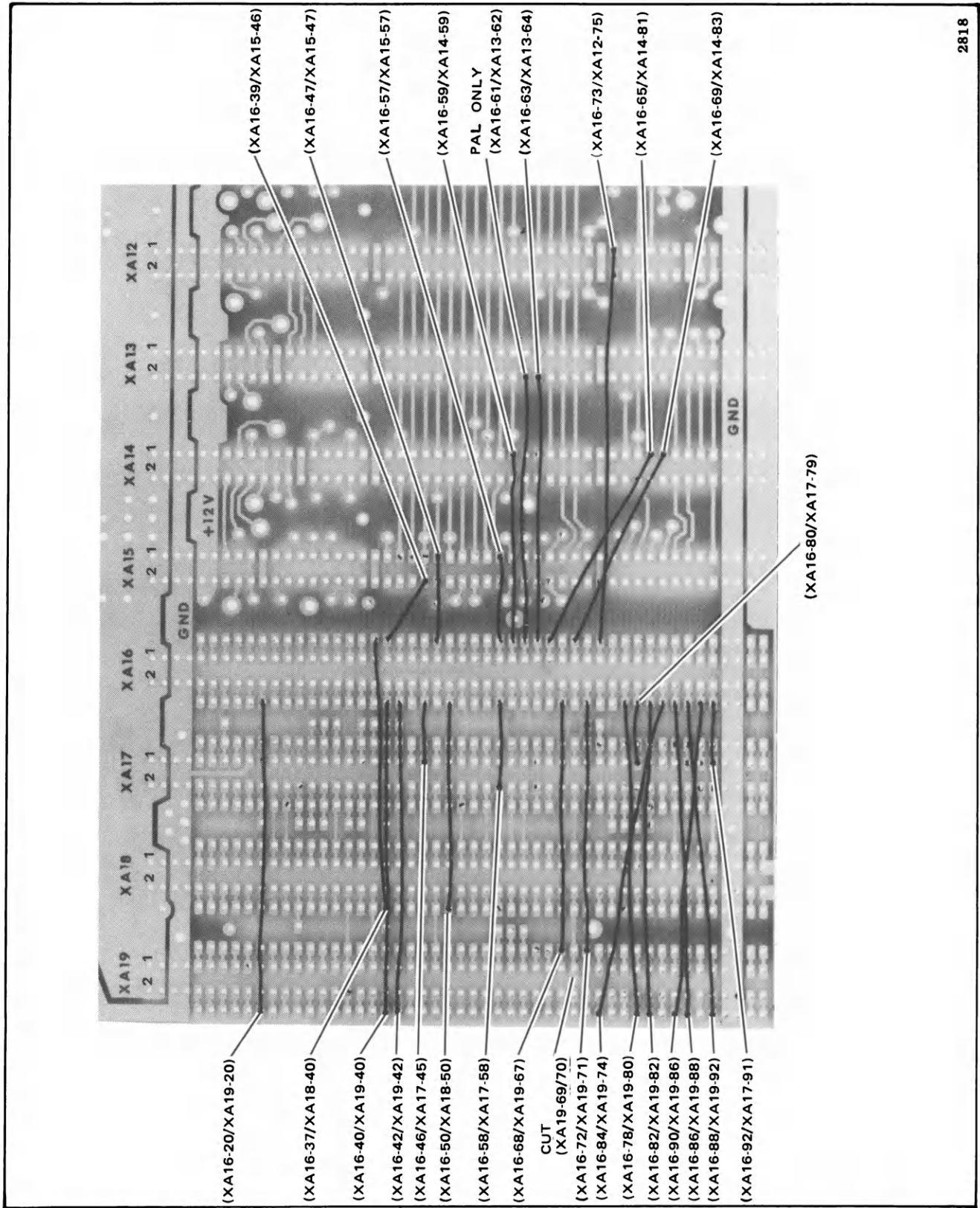


Figure 1. Motherboard, Left Portion

- a. XA16-20 to XA19-20
- b. XA16-37 to XA18-40
- c. XA16-39 to XA15-46
- d. XA16-40 to XA19-40
- e. XA16-42 to XA19-42
- f. XA16-46 to XA17-45
- g. XA16-47 to XA15-47
- h. XA16-50 to XA18-50
- i. XA16-57 to XA15-57
- j. XA16-58 to XA17-58
- k. XA16-59 to XA14-59
- l. XA16-61 to XA13-62 (PAL only)
- m. XA16-63 to XA13-64
- n. XA16-65 to XA14-81
- o. XA16-68 to XA19-67
- p. XA16-69 to XA14-83
- q. XA16-72 to XA19-71
- r. XA16-73 to XA12-75
- s. XA16-78 to XA19-80
- t. XA16-80 to XA17-79
- u. XA16-82 to XA19-82
- v. XA16-84 to XA19-74
- w. XA16-86 to XA19-88
- x. XA16-88 to XA19-92
- y. XA16-90 to XA19-86
- z. XA16-92 to XA17-91
- aa. XA2-85 to XA2-89 (Figure 2)
- bb. XA3-79 to pad, previously connected to XA2-85 (see step 2b) (Figure 2)

4. Install modification harness, assembly no. 1400842-01, per the following steps (See Figure 3):

- a. Dress CP-P5 end of harness to new Time Readout PWA and connect to J5. Spot tie this end of cable to existing harness, allowing sufficient slack.
- b. Spot tie the breakout to motherboard to the existing harness.
- c. Route the other end of this cable to I/O J10, I/O J22, and A I/O P2. Spot tie harness to existing harness.
- d. Insert the white/green cable into A I/O P2 pins 16 and 17, the shield going to pin 16.

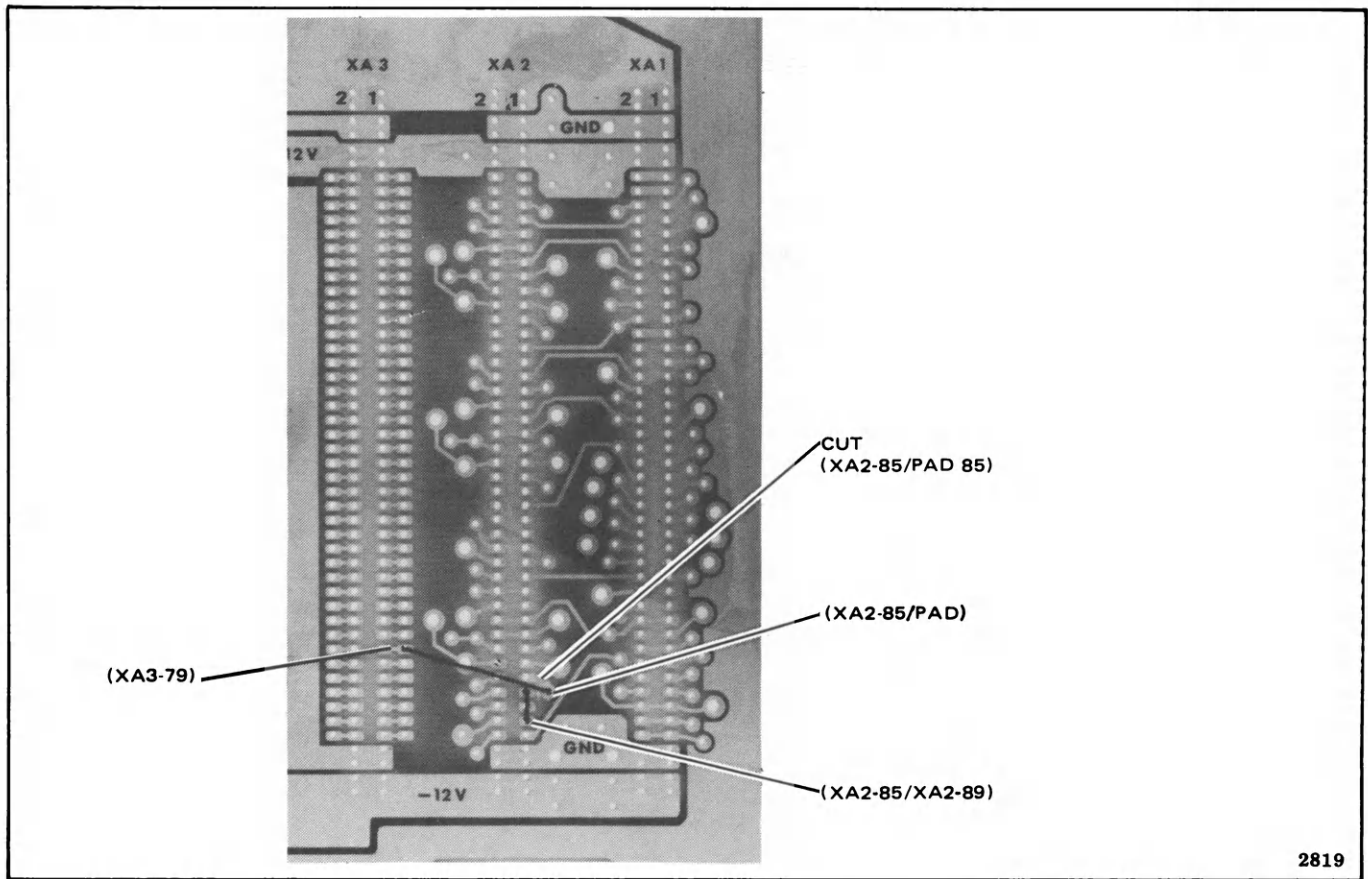


Figure 2. Motherboard, Right Portion

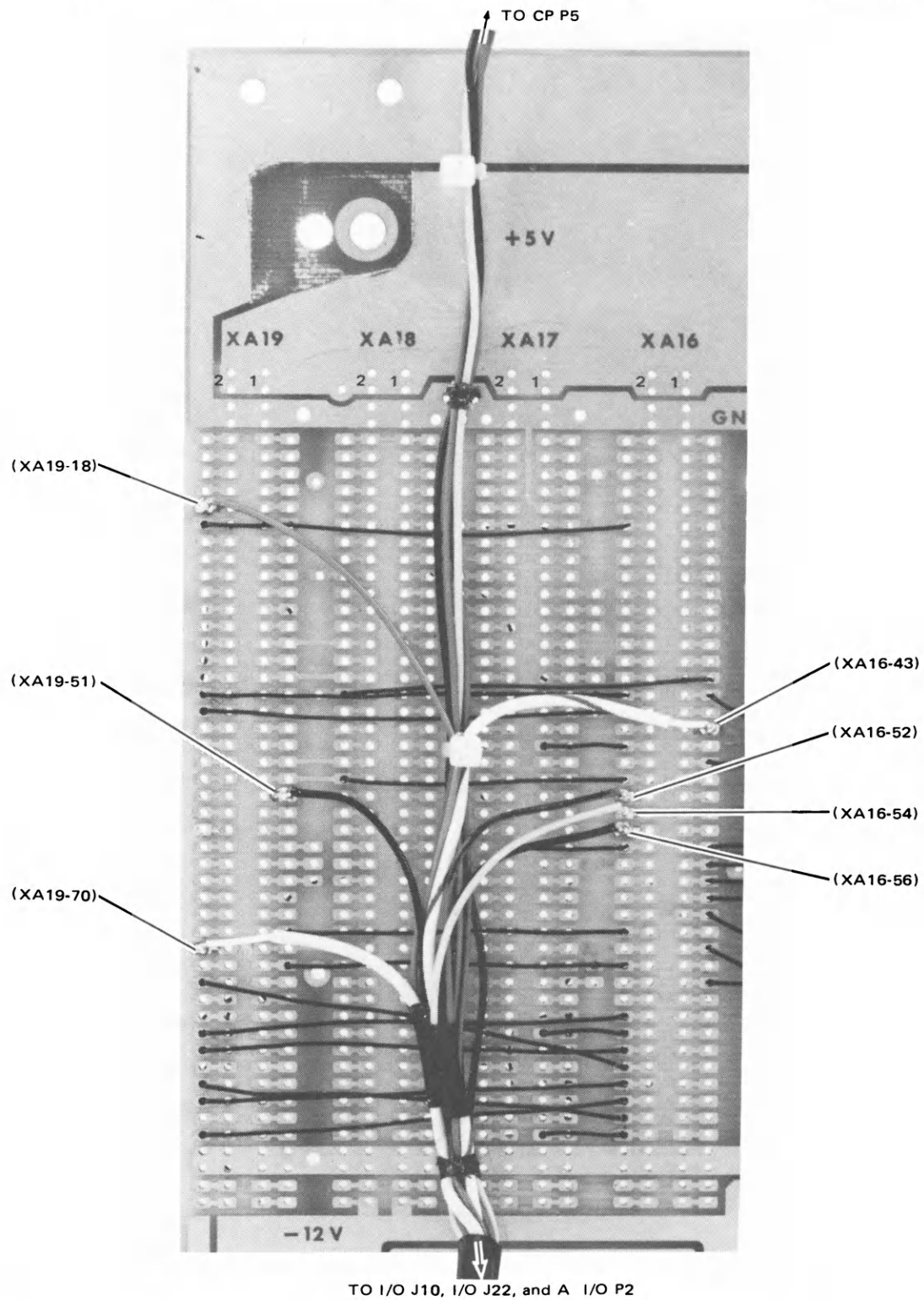
e. Insert the contacts into I/O J10 as follows:

- (1) Gray wire to pin 48.
- (2) Yellow wire to pin 54.
- (3) Black wire to pin 60.
- (4) Red wire to pin 42.
- (5) Blue wire to pin 36 (remove and insulate the existing wire).
- (6) Shielded wire to pin 78 and shield to pin 72.

f. Remove the existing wire from I/O J22 pin LL, cut off the contact, and insulate the wire. Insert the contact on the white wire into pin LL.

g. Cut each of the following wires to the correct length and solder to the motherboard, per Figure 3:

- (1) Black wire to XA16-56.



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Figure 3. Modification Harness

- (2) Yellow wire to XA16-54.
 - (3) Gray wire to XA16-52.
 - (4) White/green cable to XA16-43 (shield floats).
 - (5) Blue wire to XA19-51.
 - (6) Red wire to XA19-18.
 - (7) White/yellow cable to XA19-70 (shield floats).
5. Perform a continuity check of the electronics assembly modifications, using an ohmmeter and two extender boards.
 6. Replace the following:
 - a. Power chassis assembly
 - b. Regulator assembly (Before the regulator assembly is replaced, the regulator part number is checked.)
 - c. MDA assembly
 - d. Rear cover

PWA Location Label

Fasten PWA location label 1400513 to the front door, over the existing door label.

Replacement of Tape Timer PWA

Replace Tape Timer PWA 19 with PWA Assembly No. 1400190-07, furnished with TCR/G kit.

Modification of Reference PWA 12

Modify the Reference PWA, Assembly No. 1400123 (-01 through -05), as follows:

1. Add a jumper wire, (part no. 615-095) between pin 75 and A13-13.
2. Change the assembly no. to 1400123-06.

Modification of NTSC/PAL-M Control Track PWA 14

Modify the Control Track PWA, Assembly No. 1400140 (-01 through -05), as follows:

1. Add a jumper wire, (part no. 615-095) between pin 81 and A32-5 (NTSC), or between pin 81 and A25-5 (PAL-M).
2. For PAL-M operation only, add a jumper wire, (part no. 615-095) between pin 83 and A33-1.
3. Change the assembly no. to 1400140-06.

Modification of PAL/SECAM Control Track PWA 14

Modify the Control Track PWA, Assembly No. 1400143 (-01 through -06), as follows:

1. Add a jumper wire, (part no. 615-095) between pin 81 and A28 pin 5.
2. Change the assembly no. to 1400143-07.

Modification of NTSC Color Framer PWA 13

Modify the NTSC Color Framer PWA, Assembly No. 1400130 (-01 through -02), as follows:

1. Add a jumper wire, (part no. 615-095) between pin 64 and A10-4.
2. Change the assembly no. to 1400130-03.

Modification of PAL/SECAM or PAL-M/SECAM Color Framer PWA 13

Modify the PAL/SECAM Color Framer PWA, Assembly No. 1400133-01 through -04, or the PAL-M/SECAM Color Framer PWA, Assembly No. 1400136-01, as follows:

1. Add a jumper wire, (part no. 615-095) between pin 62 and A17-8.
2. Add a jumper wire, (part no. 615-095) between pin 64 and A18-4.
3. Change the assembly no. to 1400133-05 (PAL/SECAM) or 1400136-02 (PAL-M/SECAM).

Power Supply Upgrade Kit

1. Check the power regulator assembly part number.
2. If it is 1400490, install the Power Supply Upgrade Kit, Part No. 1400599. If it is 1400595, use the parts in the upgrade kit as spares.
3. Installation of the power supply upgrade kit is performed per the following steps:
 - a. On the Power Regulator PWA (Figure 4) drill one 0.140-in. diameter hole (A) and three 0.050 in. diameter holes (B, C, and D). Clear ground plane on component and trace sides.
 - b. Install eyelets (part no. 261-024) into holes B, C, and D. Do not let eyelets contact any traces.
 - c. Install transistor Q7, D44E2 (part no. 580-830) into holes A, B, C, and D as in Figure 4, and secure it as in Figure 5.
 - d. Replace R35 (4.7K) resistor with a 10K resistor (part no. 066-830).
 - e. Cut a trace from Q1-E to feed through at finger connector number 9, on circuit side, as in Figure 6.
 - f. Add the following jumper wires (part no. 615-095) on circuit side:

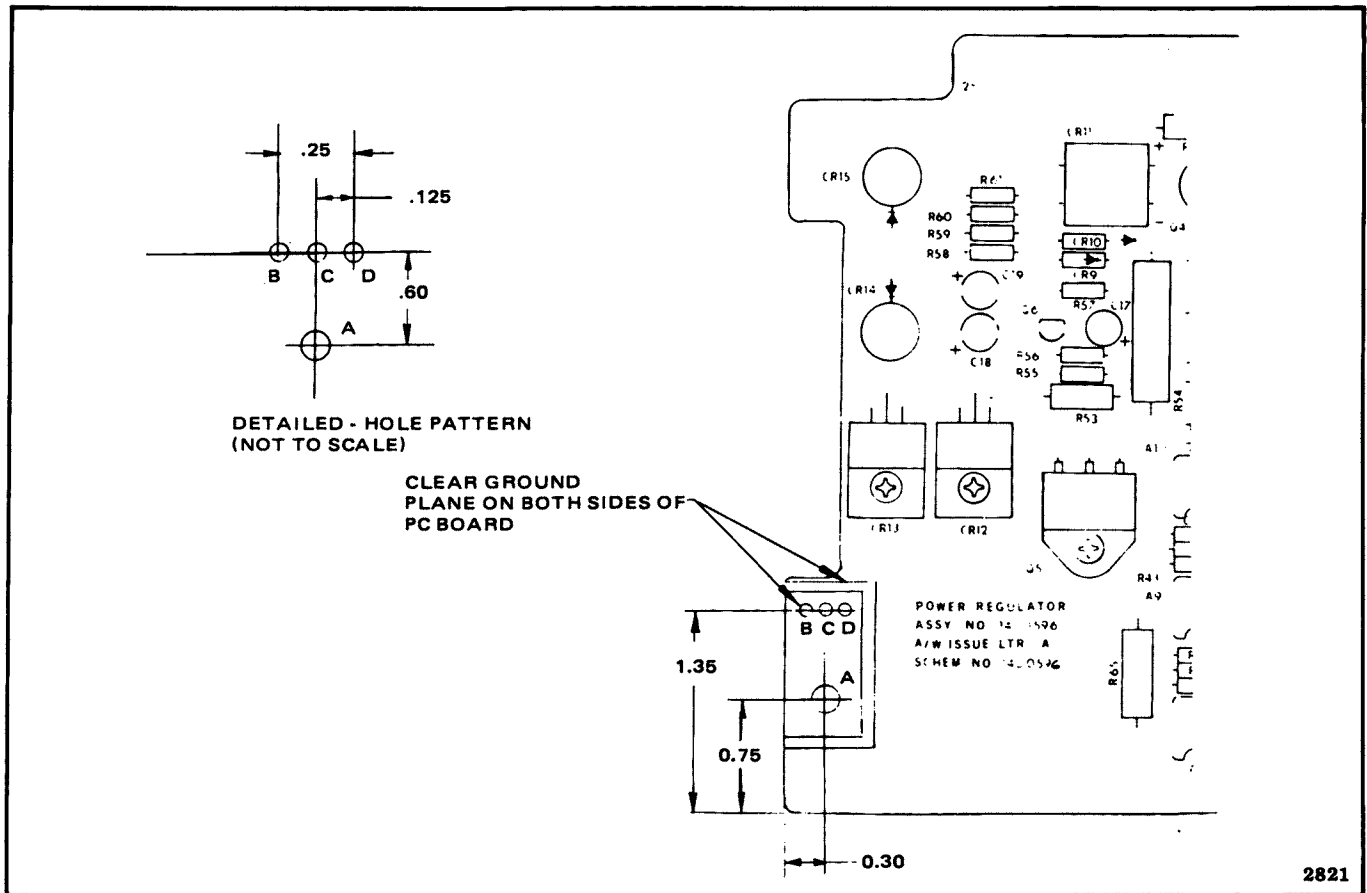


Figure 4. Hole Pattern

- (1) Hole B to feed through at finger connector number 9 (Figure 6).
 - (2) Hole C to A2-8.
 - (3) Hole D to Q1-E.
- g. Change the Power Regulator PWA Assembly No. to 1400596-01. Change the PWA issue letter to A. Change the Schematic No. to 1400598.
 - h. On the heat sink assembly, located behind the power regulator board, replace transistor Q001-MJ4033 (part no. 580-466) with transistor 2N5301 (part no. 580-244).
 - i. Replace (on heat sink assembly) 10A fuse F001 (part no. 070-998) with a 15A fuse (part no. 070-431).
 - j. Replace (on heat sink assembly) 0.1-ohm resistor R001 (part no. 043-583), with a 0.05-ohm resistor (part no. 059-408).
 - k. Install (on heat sink assembly) the following components:

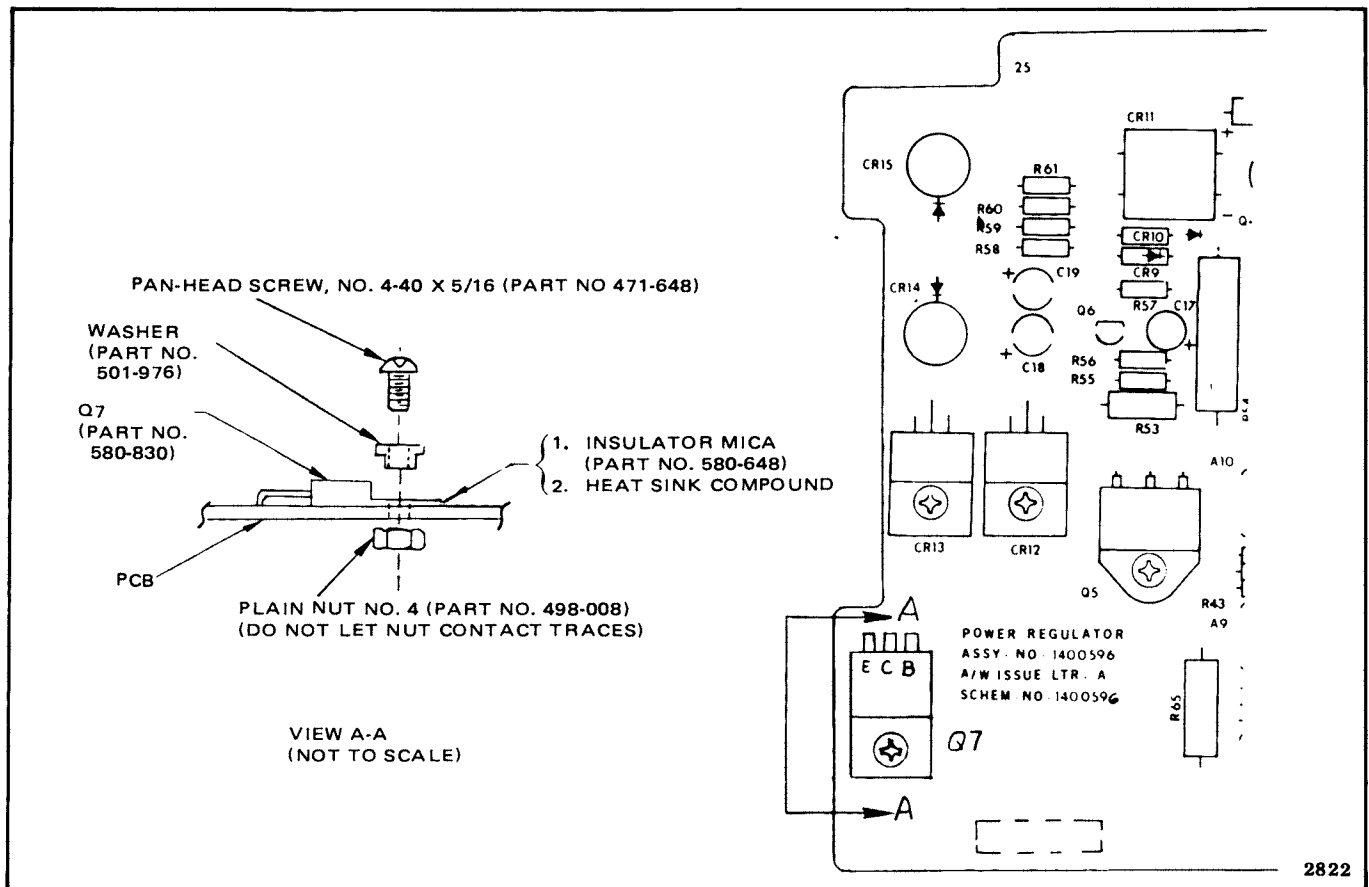


Figure 5. Transistor Q7 Mounting

- (1) R005 (resistor part no. 066-677), C.F., 68 ohms, 1/4W, 5%) between Q001-B and Q001-E.
 - (2) CR006 (diode part no. 013-678, power rectifier, CD451), with anode to Q001-E and cathode to Q001-C.
- I. Change the regulator assembly no. to 1400595-01.
 - m. Check remote interface cable continuity. This cable runs from VPR-2 P10 to J22 of the studio console connector panel (rear of studio console assembly).

Check:

from P10-42 to J22-42
from P10-48 to J22-48
from P10-54 to J22-54
from P10-60 to J22-60

It may be necessary to add some or all of the above connections. If such is the case, use 24 AWG stranded, insulated wire, with contact pins at P10 and J22. The pins can be found in the VPR-2

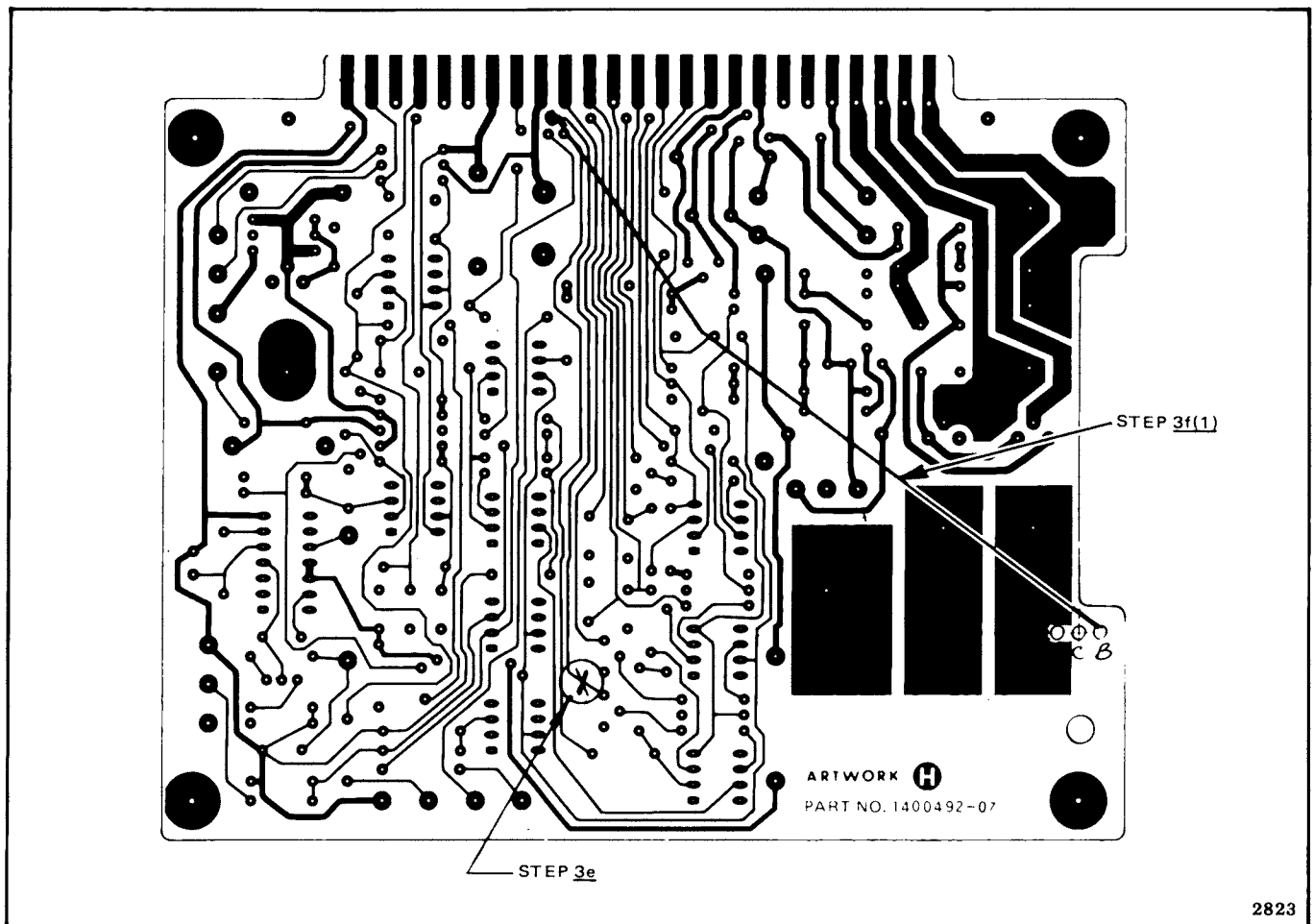


Figure 6. Power Regulator Modifications

Miscellaneous Parts Kit (part no. 1400008-01). Use 26-24 AWG contact pins (part no. 166-266) in P10, and 16-18 AWG contact pins (part no. 166-227) in J22.

Jumper Positioning

When installing the TCR/G kit, two jumper changes on the VPR-2 are required:

1. For 525- or 625-line use, set jumper J6 of the Audio PWA (board no. 2) to the A-B position to provide remote and BNC connector outputs from the TCR/G. (The TCR/G record level output is controlled by the setting of 2R154 on PWA 2, and is factory set for a +2.0 dB reading on the Audio 3 vu meter.) Note: The TCR/G has a constant frame rate output when the transport is in slow motion or shuttle modes. This output will be at a 30-Hz (25-Hz) rate. If an editing system requires slow or high speed rates (off-tape wide-band code) then jumper J6 should remain in the B-C position.
2. For a 625-line system with the optional EBU fourth audio channel electronics installed, set jumper J1 of the EBU Audio PWA (board no. 3) to the B-C position to enable acceptance of the TCR/G output.

INSTALLATION OF KIT NO. 1400860

For kit no. 1400860, PWA modifications are required and, for most units, power supply modifications are required. Perform the modifications per the following steps:

1. Modify the following PWA's as in the modification instructions given for kit no. 1400840:
 - a. Reference PWA, Assembly No. 1400123 (-01 through -05).
 - b. NTSC/PAL-M Control Track PWA, Assembly No. 1400140 (-01 through -05).
 - c. PAL/SECAM Control Track PWA, Assembly No. 1400143 (-01 through -06).
 - d. NTSC Color Framer PWA, Assembly No. 1400130 (-01 through -02).
 - e. PAL/SECAM Color Framer PWA, Assembly No. 1400133 (-01 through -09) or PAL-M/SECAM Color Framer PWA, Assembly No. 1400136-01.

It is suggested that the following connections be verified on the electronics motherboard assembly:

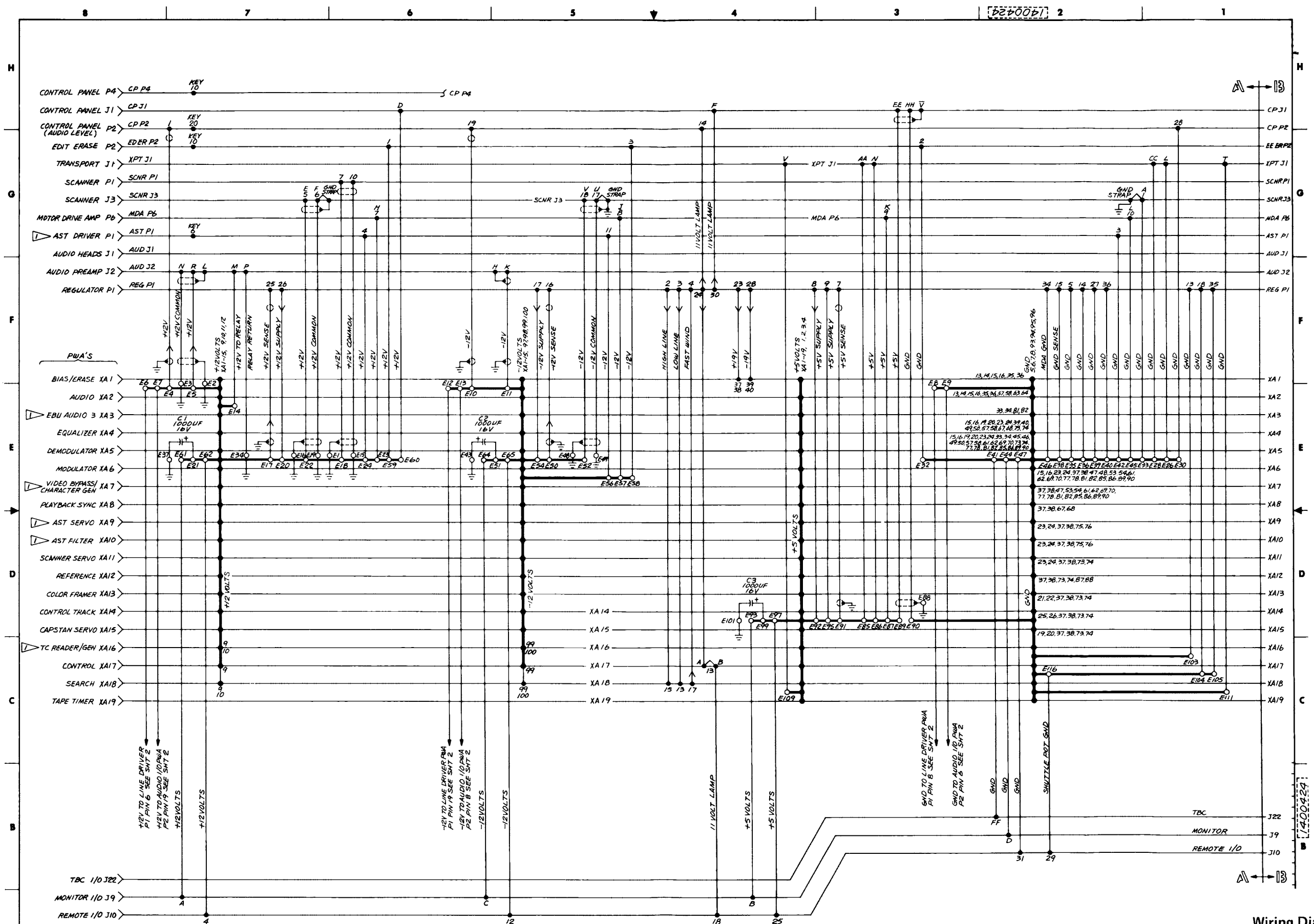
XA7-16 to XA16-20
XA16-37 to XA18-40
XA16-39 to XA15-46
XA16-65 to XA14-81
XA16-69 to XA14-83

If necessary, establish any missing connections using AWG insulated wire.

2. Check the regulator assembly part number as in the instructions given for kit no. 1400840, under the heading *Power Supply Upgrade Kit*. Install the power supply upgrade kit, if needed, as in the instructions given for kit no. 1400840.
3. Perform a continuity check of the remote interface cable as in step 3, substep m, of the Power Supply Upgrade Kit instructions.
4. When installing the TCR/G Kit No. 1400860, the same jumper changes are required as for the installation of the kit no. 1400840. These changes are stated above, under the heading *Jumper Positioning*.

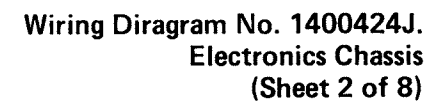
OPERATION AND MAINTENANCE

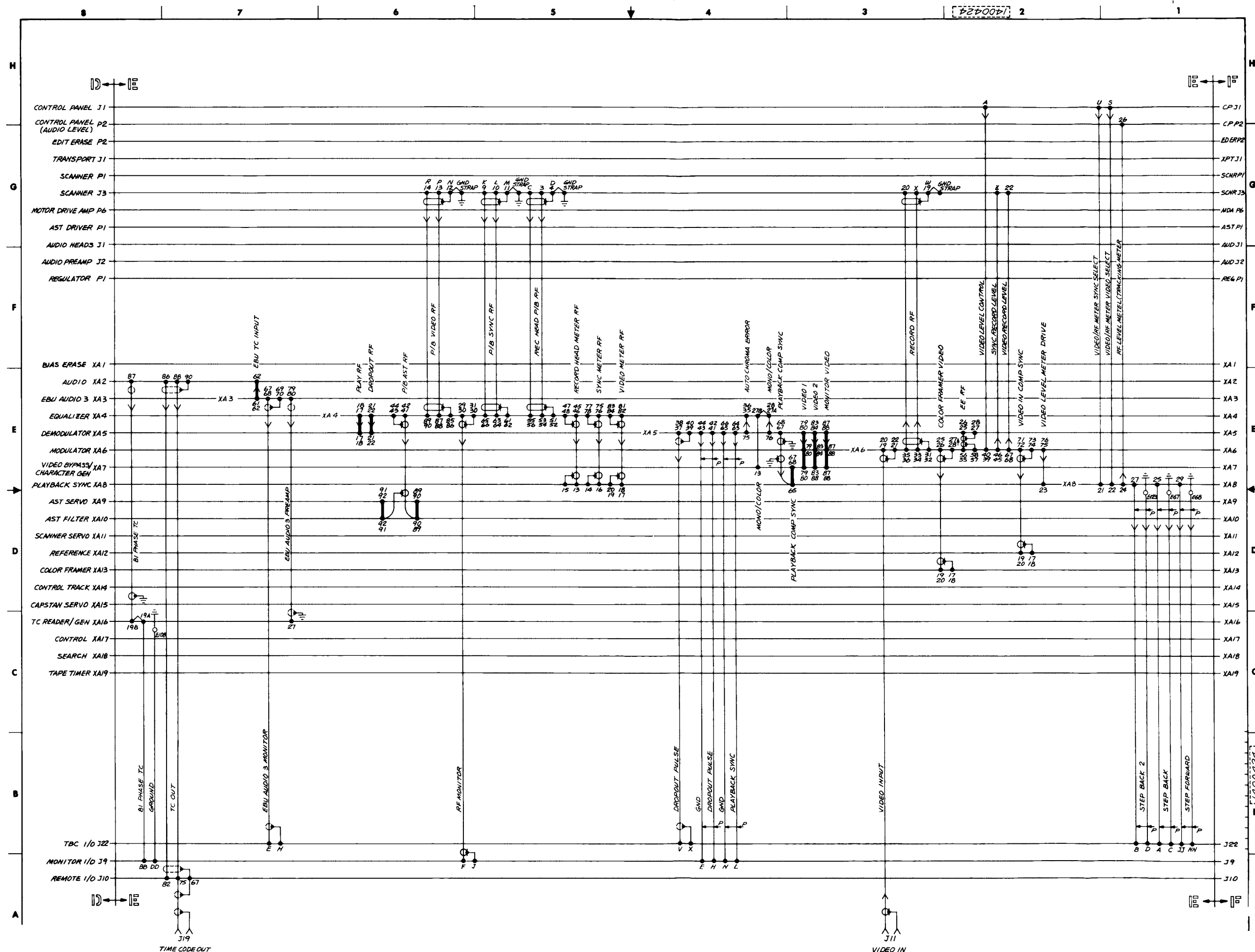
Refer to the Time-Code Reader/Generator PWA accessory manual, Catalog No. 1809449, for operation and maintenance information. The electronics chassis wiring diagram, 1400424, is included in this installation instruction package.

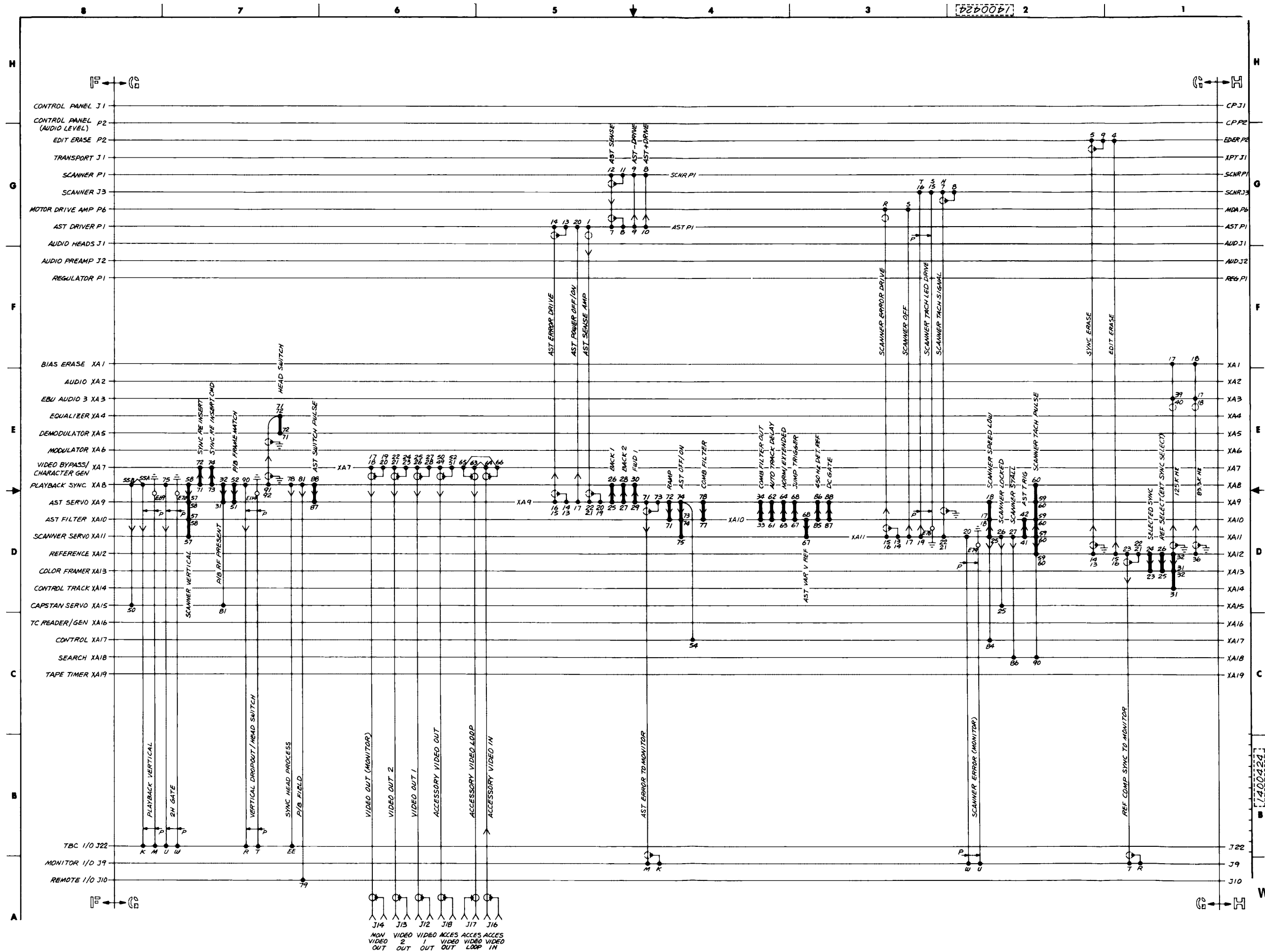


- NOTES:
- INDICATED ITEM IS AN OPTION / ACCESSORY.
 - FOR 3 CHANNEL (SMPT) OPERATION, PLUG INTO J5 FOR 4 CHANNEL (EBU) OPERATION USE J6.
 - SOCKET SHARED IN HARNESS.
 - ALL NUMBERING OR LETTERING ON ANY GIVEN LINE REPRESENTS CONNECTOR PIN NUMBERS OR CAPACITOR
- TERMINALS.
- CONNECTIONS SHOWN USING HEAVY LINES () REPRESENT MOTHER BOARD TRACES OR BUSES.
 - CONNECTIONS SHOWN USING THIN LINES () REPRESENT WIRES OR COMPONENT LEADS.
 - THE FOLLOWING SYMBOL REPRESENTS TWO WIRES
- 'A' & 'B' CONNECTED TO THE SAME PIN NUMBER ON MOTHER BOARD.
- ARROW () REPRESENTS SOURCE OF SIGNAL.

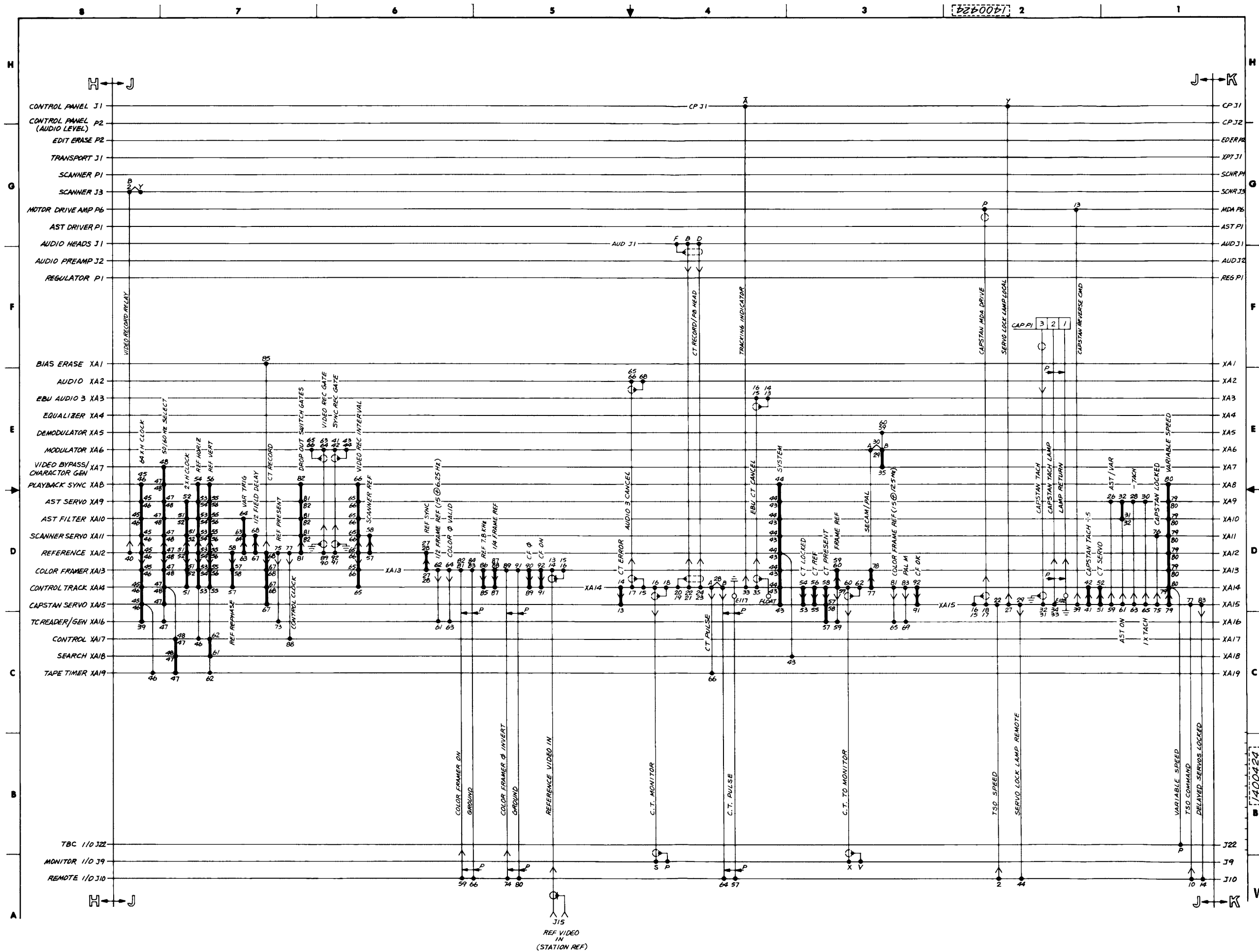
Wiring Diagram No. 1400424J.
Electronics Chassis
(Sheet 1 of 8)

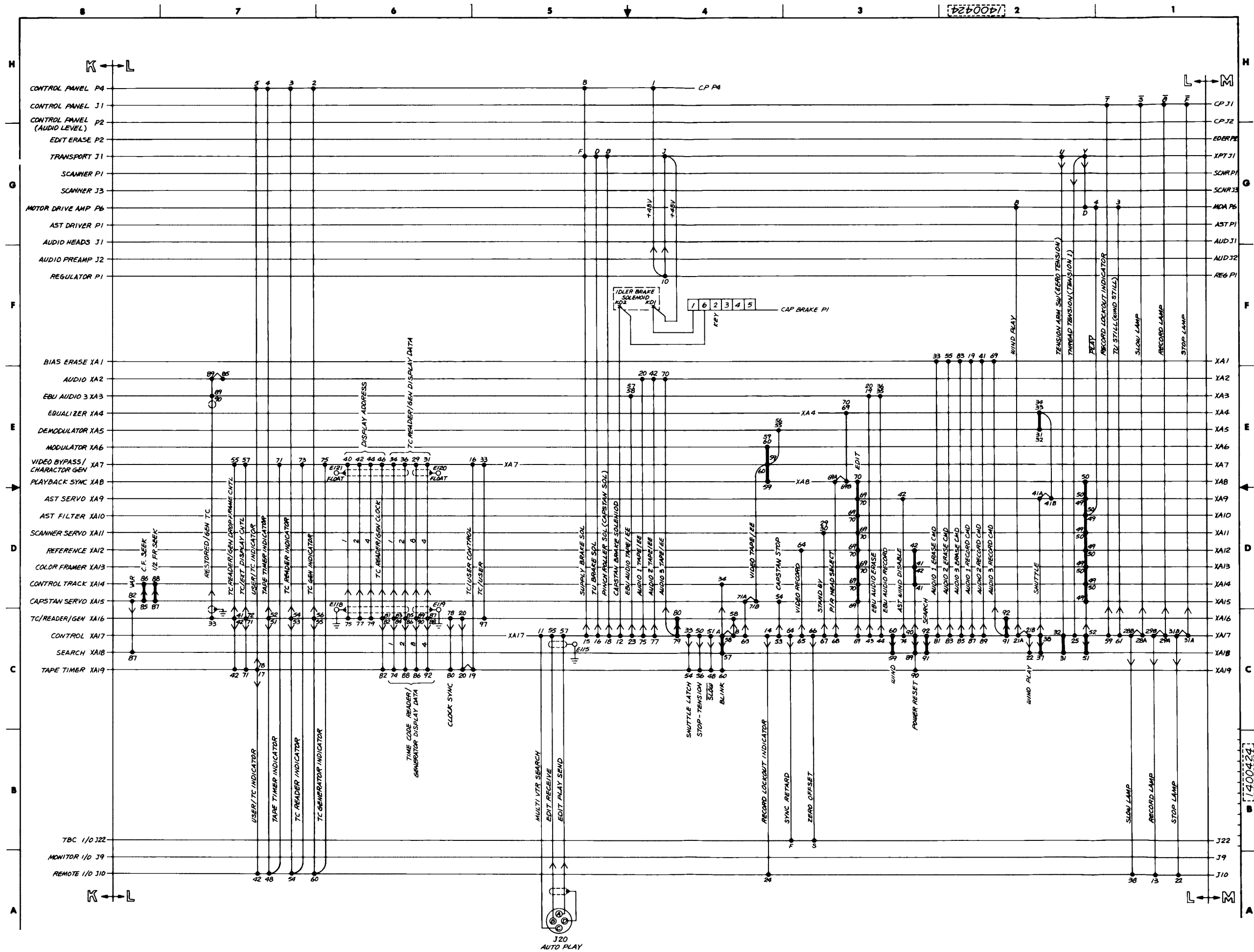


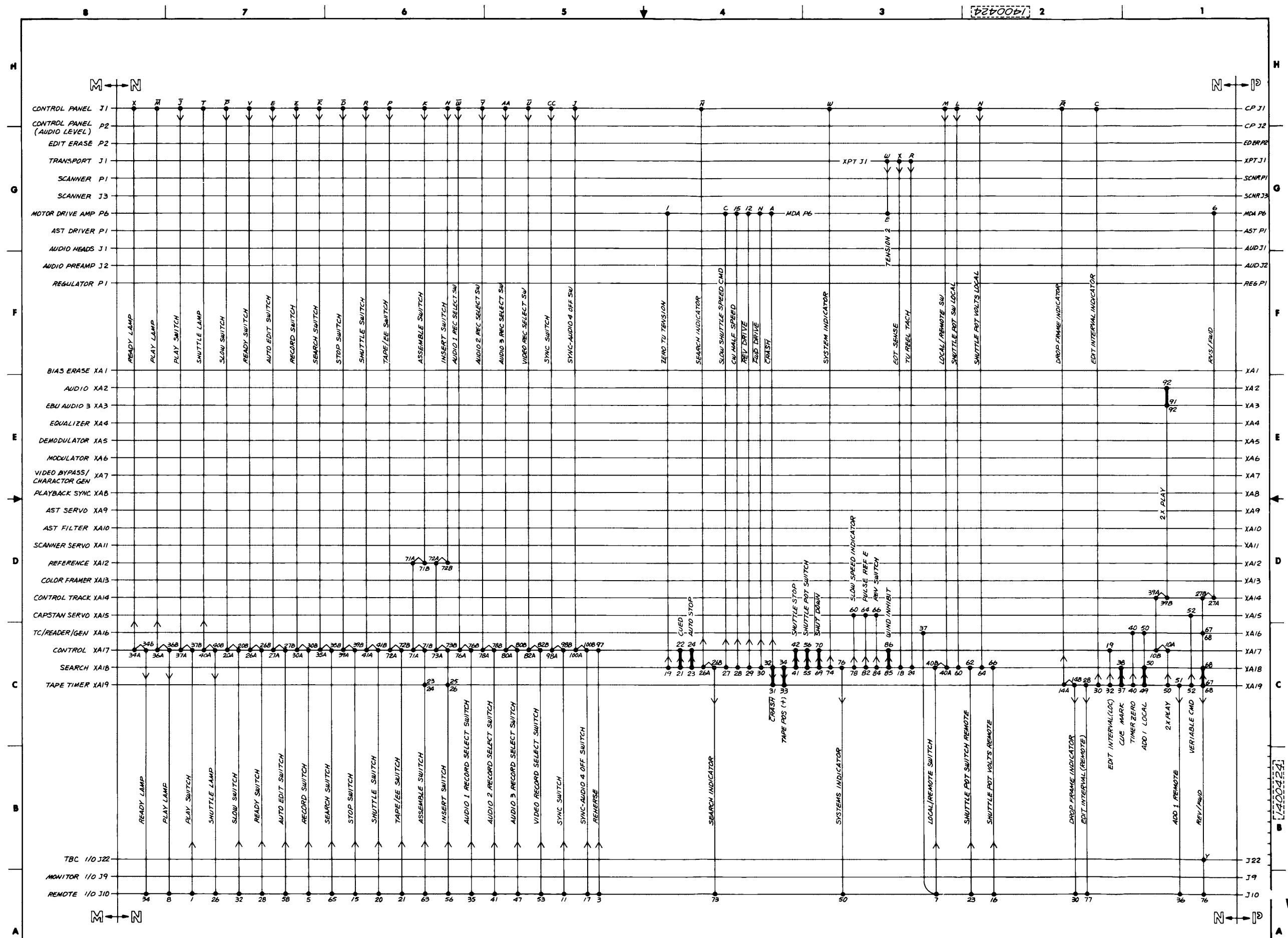


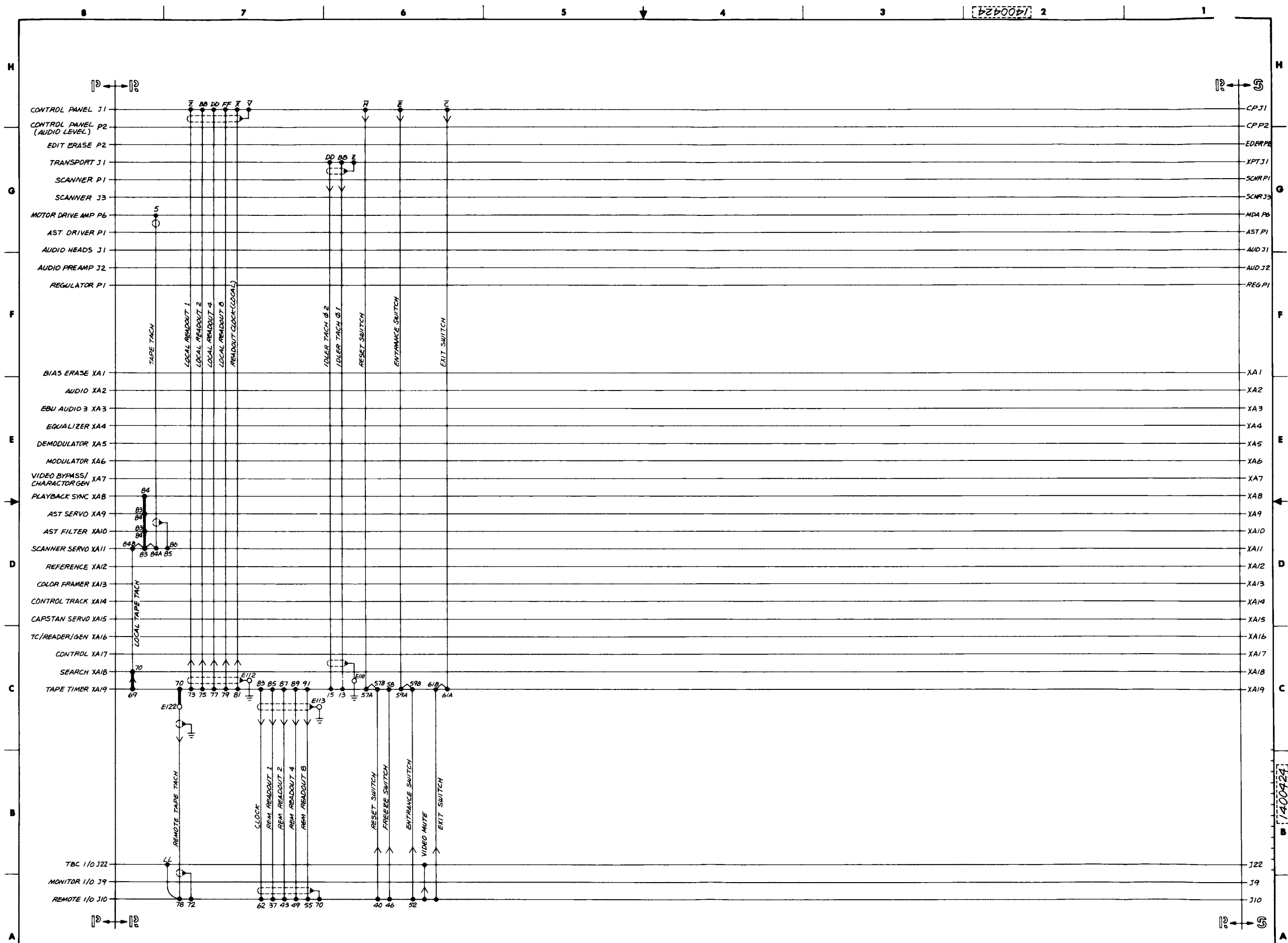


Wiring Diagram No. 1400424J.
Electronics Chassis
(Sheet 4 of 8)









Wiring Diagram No. 1400424J.
Electronics Chassis
(Sheet 8 of 8)

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